Web Services

Question 1

Draw web services execution model?



Question 2

Develop a web service with four web methods as follows:

- (a) Add
- (b) Subtract
- (c) Multiply
- (d) Divide

Assume all above methods need two parameters and return a single value as string value.

Using guidelines provided in class write code for above web service.



WebService.asmx

<%@ WebService Language="VB" Class="WebService" %>

WebService.vb

Imports System.Web

```
Imports System.Web.Services
Imports System.Web.Services.Protocols
<WebService(Namespace:="http://tempuri.org/")>
<WebServiceBinding(ConformsTo:=WsiProfiles.BasicProfile1_1)>
Public Class WebService
    Inherits System.Web.Services.WebService
    <WebMethod()>
   Public Function Add(ByVal a As Double, ByVal b As Double) As String
        Return (a + b).ToString()
   End Function
   <WebMethod()>
   Public Function Subtract(ByVal a As Double, ByVal b As Double) As String
        Return (a - b).ToString()
   End Function
   <WebMethod()>
   Public Function Multiply(ByVal a As Double, ByVal b As Double) As String
        Return (a * b).ToString()
   End Function
    <WebMethod()>
   Public Function Divide(ByVal a As Double, ByVal b As Double) As String
        If b = 0 Then
            Return "Cannot divide by zero."
        Else
            Return (a / b).ToString()
        End If
    End Function
End Class
```

Question 3

Q3) Test the web service using browser on local pc. Install Internet Information Services on your laptop/pc (if not installed) Using IIS manager create two separate applications as follows:

- 1) MathLibService
- 2) ServiceClient

Now, to make it a Web Service accessible through virtual path, follow the following steps

- 1. Open IIS Manager
- 2. Right-Click Default Websites and >Add Applications



3. Add Alias (The Name You want your service to be accessed by) and the **Physical Path** of your WebService

			404	North No.	 	
Add Applicatic	n				?	×
Site name: Path:	Default W /	eb Site				
Alias:		А	pplication pool	:		
MathsService	:	D	efaultAppPool		Select	
Example: sale	25					
mental abcit	i: /eh Hosting	Ushe\Accione	nant\WahSan ic			
nene(Edb) (m	corriorang	(cap) (-ssigin	nene(mebbervie			
Pass-through	n authentica	tion				
Connect as	Tes	t Settings				
🗌 Enable Pre	eload					
				04	Cancel	
					Cancer	

- 4. Finally, right click **MathService** and >Convert to Application.
- 5. Now you will be able to access the webservice in you browser using

http://localhost/MathService/WebService.asmx

WebService

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WebService													

The following operations are supported. For a formal definition, please review the <u>Service Description</u>.

- <u>Add</u>
- Divide
- <u>Multiply</u>
- <u>Subtract</u>

1. Add Webservice

WebService								
Click <u>here</u> for a complete list of operations.								
Add								
Test								
To test the operation using the HTTP POST protocol, click the 'Invoke' button.	To test the operation using the HTTP POST protocol, dick the 'Invoke' button							
Parameter Value								
a: 1223								
b: 233								
Invoke								

This XML file does not appear to have any style information associated with it. The docun shown below.

▼ <string th="" x<=""><th><pre>nlns="http://tempuri.org/"></pre></th></string>	<pre>nlns="http://tempuri.org/"></pre>
<script< td=""><td><pre>src="chrome-extension://fjnbnpbmkenffdnngjfgmeleoegfcffe/static/js/c</pre></td></script<>	<pre>src="chrome-extension://fjnbnpbmkenffdnngjfgmeleoegfcffe/static/js/c</pre>
1456	
<pre></pre>	

2. Divide Webservice

WebSe	rvice	
Click <u>here</u> for a	a complete list of operations.	
Divide		
Test		
To test the o Parameter	operation using the HTTP POST protocol, click the 'Invoke' button. Value	
a:	183782	
b:	781236	
	Invoke	
This XML file	e does not appear to have any style information associated with it. The c	locumer

t tree is shown below.

▼ <string xmlns="http://tempuri.org/"></string>
<pre><script src="chrome-extension://fjnbnpbmkenffdnngjfgmeleoegfcffe/static/js/contentInt</pre></pre>
0.235245175593547

3. Multiply Webservice

W	/ebSe	rvice
Clic	k <u>here</u> for a	a complete list of operations.
M	ultiply	
Те	st	
1	To test the o	pperation using the HTTP POST protocol, click the 'Invoke' button.
	Parameter	Value
	a:	12787
	b:	78172
		Invoke

This XML file does not appear to have any style information associated with it. The document tree is shown below.

</string>

4. Subtract Webservice



Question 4

Implement a web application "ServiceClient" which will use the MathLibService as a web service. Develop a suitable web page for its demonstration. Use some text boxes to take input from user. Use proxy class to get answer (response from web service) and display it on page to user.

- 1. Create a New Project for Service Client
- 2. To use the previously created web service, Right-Click your project, and Click Add>Services Reference.



3. Now add the URL of the service created

Add Service Reference		? ×
To see a list of available services on a sp for available services, click Discover. Address:	pecific server, enter a service URL and click Go. To	o browse
http://localhost/MathService/WebServic	e.asmx V Go	Discover 🚽
Services:	Operations:	
Namespace:		
MathService		
Advanced	ОК	Cancel

4. Now the service can be accessed.

Web application "ServiceClient"

Default.aspx

```
<%@ Page Language="VB" AutoEventWireup="false" CodeFile="Default.aspx.vb"</pre>
Inherits="_Default" %>
<!DOCTYPE html>
<html>
<head>
    <title>ServiceClient - Math Operations</title>
</head>
<body>
    <form id="form1" runat="server">
        <h2>Math Operation</h2>
        <asp:TextBox ID="txtA" runat="server" Placeholder="Enter A" />
        <br />
        <asp:TextBox ID="txtB" runat="server" Placeholder="Enter B" />
        <br />
        <asp:DropDownList ID="ddlOperation" runat="server">
            <asp:ListItem Text="Add" Value="Add" />
            <asp:ListItem Text="Subtract" Value="Subtract" />
            <asp:ListItem Text="Multiply" Value="Multiply" />
            <asp:ListItem Text="Divide" Value="Divide" />
        </asp:DropDownList>
        <br />
        <asp:Button ID="btnCalculate" runat="server" Text="Calculate"
OnClick="btnCalculate_Click" />
       <br />
        <asp:Label ID="lblResult" runat="server" Text="" Font-Bold="True" />
    </form>
</body>
</html>
Default.aspx.vb
Partial Class _Default
    Inherits System.Web.UI.Page
```

```
Protected Sub btnCalculate_Click(sender As Object, e As EventArgs)
    Dim a As Double = Convert.ToDouble(txtA.Text)
    Dim b As Double = Convert.ToDouble(txtB.Text)
    Dim result As String = ""
    Dim client As New WebService()
    Dim service As New MathService.WebServiceSoapClient()
    Select Case ddlOperation.SelectedValue
        Case "Add"
            result = client.Add(a, b)
        Case "Subtract"
            result = client.Subtract(a, b)
        Case "Multiply"
            result = client.Multiply(a, b)
        Case "Divide"
            result = client.Divide(a, b)
    End Select
    lblResult.Text = "Result: " & result
End Sub
```

End Class



Using the same steps, make this a webservice too which can be accessed using a virtual path

http://localhost/ServiceClient/Default.aspx



\leftarrow C () localhost/ServiceClient/Default.aspx	
Math Operation	
11	
243 Add v	
Calculate Result: 254	
\leftarrow C (localhost/ServiceClient/Default.aspx	☆)
Math Operation	
23	
223 Subtract V	
Calculate Result: -200	
\leftarrow C () localhost/ServiceClient/Default.aspx	ئ ک
Math Operation	
23 223	
Resut: 5129	
\leftarrow C () localhost/ServiceClient/Default.aspx	ئ ک
Math Operation	
23	
223 Divide V	
Calculate Result: 0.103139013452915	